

REMARKS

In response to the Final Office Action mailed April 21, 2004, Claims 1, 4, 5, 7-12 and 15-20 were examined and rejected. In response, Claim 1 is amended, no claims are cancelled and no claims are added. Applicants respectfully request reconsideration of pending Claims 1, 4, 5, 7-12 and 15-20, as amended, in view of at least the following remarks and withdrawal of the final rejection.

Per our telephone conversation on Friday, July 9, 2004, in response to the Office Action mailed October 17, 2003, Claim 1 was amended to incorporate the features of Claim 2, which was cancelled. Unfortunately, Applicants' attempt to incorporate the limitations of cancelled Claim 2 into Claim 1 was incorrect. Accordingly, Applicants respectfully request that the Examiner allow entry of Claim 1, as amended, to correctly incorporate the features of previously cancelled Claim 2:

forming a SOG layer containing impurities, including either one of a p-type impurity and an n-type impurity on the entire surface of the semiconductor substrate by spin-coating and densifying a liquid silicate glass including one of P, B, In, As, and Sb doping elements. (Emphasis added.)

Furthermore, as previously agreed, the Examiner indicated a willingness to withdraw the final rejection of the pending claims in order to consider Applicants' amendment to Claim 1. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the final rejection of pending Claims 1, 4, 5, 7-12 and 15-20.

I. Claims Rejected Under 35 U.S.C. §102

The Patent Office rejects claims 1, 7, 8, 11, 17 and 18 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,340,770 issued to Allman et al. ("Allman"). Applicants respectfully traverse this rejection and respectfully request that the Examiner reconsider the final rejection of Claims 1, 7, 8, 11, 17 and 18.

Regarding Claims 1 and 11, Claims 1 and 11 recite the following claim feature, which is neither taught nor suggested by either Allman or the references of record:

forming a SOG layer containing impurities, including either one of a p-type impurity and an n-type impurity on the entire surface of the semiconductor substrate by spin-coating and densifying a liquid silicate glass including one of P, B, In, As, and Sb doping elements. (Emphasis added)

According to the Examiner, Allman teaches densifying a liquid silicate glass including one of a P, As and B doping elements at FIG. 4, block 74 and col. 2, lines 23-34. As described beginning at col. 3, line 56 of Allman:

FIG. 4 describes a second embodiment where insulating layer 18 includes a boron-phosphorus silicon glass (BPSG) layer to improve the degree of planarization.

As further described at col. 4, lines 3-5:

In block 74, the BPSG is densified while the dopants are driven out of the SOG and into the substrate to form the shallow junctions.

Based on the cited passages above, Applicants respectfully submit that Allman teaches the deposition of a BPSG layer on an insulating layer and densifying the BPSG layer. Conversely, Claims 1 and 11 recite the formation of an SOG layer on the entire surface of the substrate by spin-coating and densifying of a liquid silicate glass. Applicants respectfully submit that the formation of the BPSG layer on insulating layer 18, as taught by Allman, fails to anticipate the formation of an SOG layer on the entire surface of the substrate by spin-coating and densifying a liquid silicate glass, as recited by Claims 1 and 11.

In other words, Applicants respectfully submit that the formation of SOG layer 14, as taught by Allman, is not performed by spin-coating and densifying a liquid silicate glass to form SOG layer 14 on the entire surface of wafer 12. Furthermore, as described at block 72 of FIG. 4 of Allman, BPSG layer is deposited as an insulating layer and is therefore not formed by spin-coating, as recited by Claims 1 and 11. (See col. 3, lines 56-60.)

Accordingly, Applicants respectfully submit that a *prima facie* case of anticipation of Claims 1 and 11 by either Allman or the references of record cannot be established since Allman and the references of record fail to teach or suggest the formation of the SOG layer on the entire surface of the substrate by spin-coating and densifying of a liquid silicate glass, as recited by Claims 1 and 11. Therefore, Applicants respectfully submit that Claims 1 and 11 are patentable over Allman, as well as the references of record. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the §102(b) rejection of Claims 1 and 11.

Regarding Claims 7 and 8, Claims 7 and 8 depend from Claim 1 and therefore include the patentable claim features of Claim 1, as described above. Accordingly, Claims 7 and 8, based on their dependency from Claim 1, are also patentable over Allman, as well as the references of record. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the §102(b) rejection of Claims 7 and 8.

Regarding Claims 17 and 18, Claims 17 and 18 depend from Claim 11 and therefore include the patentable claim features of Claim 11, as described above. Accordingly, Claims 17 and 18, based on their dependency from Claim 11, are also patentable over Allman, as well as the references of record. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the §102(b) rejection of Claims 17 and 18.

II. Claims Rejected Under 35 U.S.C. §103

The Patent Office rejects Claims 4, 5, and 8-10 under 35 U.S.C. §103(a) as being unpatentable over Allman, as applied to Claims 1, 7 and 8, and further in view of Kroner, et al. (IEEE 2000) ("Kroner"). Applicants respectfully traverse this rejection and respectfully request that the Examiner reconsider the final rejection of Claims 4, 5 and 8-10.

To establish a *prima facie* case of obviousness, the following criteria must be met: (1) there must be some suggestion or motivation to modify the reference or combine the reference teachings, (2) there must be a reasonable expectation of success, and (3) the prior art references must teach or suggest all the claim limitations. (MPEP 2142) For the reasons provided below, the Examiner has failed to establish a *prima facie* case of obviousness in view of the references of record.

Regarding the Examiner's citing of Kroner, Kroner fails to rectify the above-described deficiencies of Allman; namely, the failure of Allman to teach the formation of an SOG layer on the entire surface of a semiconductor substrate by spin-coating and densifying a liquid silicate glass, as recited by independent Claims 1 and 11. As indicated above, the teachings of Allman are limited to the formation of an SOG layer on the surface of a substrate by spin-coating (*See* FIG. 3) or the formation of a BPSG layer on an insulating layer 18 by deposition of the BPSG layer on insulating layer 18 and densifying the BPSG layer. (*See* col. 4, lines 3-5.)

Hence, Applicants respectfully submit that the combination of Allman in view of Kroner is insufficient to render independent Claims 1 and 11 obvious. Accordingly, Applicants respectfully submit that independent Claims 1 and 11 recite claim features, which are neither taught nor suggested by the proposed combination of Allman in view of Kroner, as suggested by the Examiner. Therefore, Applicants respectfully submit that Claims 1 and 11 are patentable over the combination of Allman in view of Kroner, as well as the references of record.

Regarding Claims 4, 5 and 8-10, Claims 4, 5 and 8-10 depend from Claim 1 and therefore include the patentable claim features of Claim 1, as described above. Accordingly, Claims 4, 5 and 8-10, based on their dependency from Claim 1, are also patentable over the combination of Allman in view of Kroner, as well as the references of record. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the §103(a) rejection of Claims 4, 5 and 8-10.

The Patent Office rejects Claims 12, 15, 16 and 18-20 under 35 U.S.C. §103(a) as being unpatentable over Allman, as applied to Claims 11, 17 and 18, and further in view of Kroner, et al. (IEEE 2000) ("Kroner"). Applicants respectfully traverse this rejection and respectfully request that the Examiner reconsider the final rejection of Claims 12, 15, 15 and 18-20.

As indicated above, the teachings of Allman are limited to the formation of an SOG layer on the surface of a substrate by spin-coating (*See* FIG. 3) or the formation of a BPSG layer on an insulating layer 18 by deposition of the BPSG layer on the insulating layer and subsequently

densifying the BPSG layer. (See col. 4, lines 3-5.) Furthermore, Allman and Kroner are silent as to "shallow junctions having a LLD region self-aligned underneath both sidewalls of the gate pattern and a highly doped source/drain region adjacent to the LDD region", as recited by Claim 11. Therefore, Applicants respectfully submit that Claim 11 is patentable over the combination of Allman in view of Kroner, as well as the references of record.

Regarding Claims 12, 15, 16 and 18-20, Claims 12, 15, 16 and 18-20 depend from Claim 11 and therefore include the patentable claim features of Claim 11, as described above. Accordingly, Claims 12, 15, 16 and 18-20, based on their dependency from Claim 11, are also patentable over the combination of Allman in view of Kroner, as well as the references of record. Consequently, Applicants respectfully request that the Examiner reconsider and withdraw the §103(a) rejection of Claims 12, 15, 16 and 18-20.

CONCLUSION

In view of the foregoing, it is submitted that Claims 1, 4, 5, 7-12 and 15-20 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

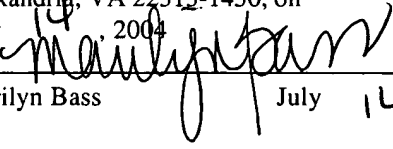
Dated: July 14 2004

By: 
Joseph Lutz, Reg. No. 43,765

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

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July 14, 2004


Marilyn Bass

July 14, 2004